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ENVIRONMENTAL FATE AND GROUND WATER BRANCH

Review Action

To: Walter Waldrop, PM # 71
Special Review and Reregistration Division (7508W)

From: Betsy Behl, Section Head
Ground Water Technology Section
Environmental Fate & Ground Water Branch/EFED (7507C)

Thru: Henry Jacoby, Chief
Environmental Fate & Ground Water Branch/EFED (7507C)

Attached, please find the EFGWB review of...

Common Name:	Metolachlor	Trade name:	Dual, Medal
Company Name:	CIBA-GEIGY Corporation		
ID #:			
Purpose:	Review protocol for prospective ground-water study		

Type Product:	Action Code:	EFGWB #(s):	Review Time:
Herbicide	001		4 days

STATUS OF STUDIES IN THIS PACKAGE: REQUIREMENTS

Guideline #	MRID	Status ¹
166-1		N

STATUS OF DATA

ADDRESSED IN THIS PACKAGE:

Guideline #	Status ²
166-1	A

¹Study Status Codes:

A=Acceptable U=Upgradeable C=Ancillary I=Invalid.

²Data Requirement Status Codes: S=Satisfied P=Partially satisfied N=Not satisfied R=Reserved W=Waived.

1. CHEMICAL:

Chemical name: 2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide

Common name: Metolachlor

Trade names: Dual and Medal

Structure:

2. TEST MATERIAL:

Metolachlor

3. STUDY/ACTION TYPE

Submission Related Data Package

4. STUDY IDENTIFICATION:

Title: Metolachlor Registration Standard
Ground Water Data Call-In
Submission of Protocols, Site Selection and
Characterization Reports and Analytical Method

Authors: Summit Environmental
Stone Environmental

For: CIBA-GEIGY Corporation
P.O. Box 18300
Greensboro, NC 27419

5. REVIEWED BY: Kevin Costello, Hydrologist
OPP/EFED/EEGWB/Ground-Water Technology Section

Signature: _____

Date: _____

6. APPROVED BY: Betsy Behl, Section Chief
OPP/EFED/EEGWB/Ground-Water Section

Signature: Betsy Behl

Date: 2/16/95

7. CONCLUSIONS:

The two study sites proposed by CIBA Plant Protection (CIBA) for the small-scale prospective ground-water studies for metolachlor are acceptable. Both the Upper Maxville, Wisconsin and Macon County, Georgia sites can be classified as scenarios with a high vulnerability to metolachlor leaching. The site characterization at the two locations was adequate.

The monitoring plans for the two studies should be modified to be more in line with planned revisions to prospective study guidelines. The number of monitoring wells and lysimeters at each site should be greater than proposed for both sites, to better evaluate movement of metolachlor through the soil column in the dissolved phase. Conversely, the proposed soil sampling program should be reduced, as sufficient evidence is available on the field dissipation of metolachlor.

CIBA should begin site instrumentation at the two sites as quickly as possible, to allow the application and monitoring phases of these studies to begin in the spring of 1995.

8. RECOMMENDATIONS

1. CIBA should instrument the two study sites immediately to prepare for application of metolachlor and start of monitoring this spring.

2. CIBA's study design calls for the installation of four clusters of two wells and four clusters of four lysimeters at each site. The guideline revisions to be proposed by EPA in March 1995 call for 8 clusters of two wells, and 8 clusters of 4 lysimeters. The monitoring plan should be revised to meet these guidelines.

3. The increase in monitoring wells and lysimeters should be offset by a reduction in the amount of soil sampling. The purpose of the small-scale prospective studies is to monitor the movement of metolachlor in the dissolved phase toward ground water. Increased monitoring of soil water and ground water will better meet the needs of the study than an on-site field dissipation study. EFGWB's Chemistry Review section concurs that there is no need for another field dissipation study for metolachlor.

The most important information to be gained by soil sampling in a prospective study is a determination of what portion of the pesticide applied to the field can be accounted for on the soil surface. Therefore, soil sampling on the day of application should be focused on answering this question. Rather than risk dilution of metolachlor by sampling the top six inches of the soil, only the top two or three inches should be sampled, **without removing the plant matter at the surface**. Soil sampling should continue after this date to a depth of 12 inches, but only until the day 14

sampling round.

4. EFGWB prefers that metolachlor be applied as a preplant soil incorporation to the peanuts at the Georgia site. The Georgia protocol suggests a spray application. Metolachlor will be applied by foliar spray at the Wisconsin site; soil incorporation in Georgia would allow some comparison between the two application methods.

5. If CIBA intends to use the information from these studies for modeling purposes, batch equilibrium and aerobic soil metabolism studies should be performed on soil cores obtained during well-installation, rather than collecting dissipation data.

6. The monitoring plans call for limited sampling of ground and soil water during the first month. Since there will be an irrigation event within the first 24 hours after application, lysimeter samples must be taken starting with the day 3 sampling round. Since it will not be possible to get analytical results for the lysimeter samples quickly enough, the monitoring well sampling schedule can not be based on these results. Therefore, the ground-water sampling must begin on day 14.

7. In accordance with the label directions, the study directors must apply 1/2 inch of sprinkler irrigation within 2 days after application. The monitoring plan for the Georgia study states that 1/2 inch of irrigation water will be applied within 24 hours of application of the tracer, which is intended to be on the same day as the metolachlor application. The Wisconsin monitoring plan must also include this stipulation.

8. The study directors must inform EFED immediately which metolachlor degradates they intend to analyze in soil and water samples.

9. DISCUSSION:

EPA declared metolachlor eligible for reregistration in the December 1994 Metolachlor Reregistration Eligibility Document, with some delay in the reregistration for potatoes, soybeans and peanuts due to the Delaney Clause. However, due to the detection of metolachlor in the ground water of 20 states, the Agency is concerned about the degradation of water quality in metolachlor use areas. The two prospective studies will be the basis on which the Agency will decide if further action will be required to mitigate the potential for metolachlor to leach to ground water.

SITE CHARACTERIZATION

Two study sites were selected to represent "worst-case" scenarios for the potential leaching of metolachlor to ground water. Separate contractors, Summit Envirosolutions and Stone Environmental, were selected to perform the Wisconsin and Georgia studies, respectively. The site characterization for these two

studies indicates that they do in fact meet EFGWB criteria for high vulnerability sites. However, a few points need to be clarified for these sites:

1. Summit did not detect metolachlor, alachlor, or acetochlor in the ground water or soil during characterization of the Wisconsin site. No mention was made of whether the samples were analyzed for degradates, and if any were detected.

2. Summit states that the Upper Maxville site has a "thin O horizon" at the top of the soil column. If that is so, it would mean that there is a surface layer of more than 25% organic matter. This does not show up in their characterization samples. It is important that Summit clarify how thick this layer is, (if it is 25% organic matter), or if they were referring to the previous years' crop residue.

3. Soil characterization sample analysis showed that the soil pH at the WI site was as low as 5.3 near the surface. Summit offered to bring the pH up to 6.5 by liming the site before planting. Based on the hydrolysis and Kd data in the EFED One Liner Database, the persistence and mobility of metolachlor do not seem to be pH dependent within that range. Liming the site won't be necessary, unless it is common practice for corn farming in Wisconsin.

4. The Georgia site has a sandy clay loam layer at about 15 feet, but since the study site will not be located directly above this clayey layer, this should not be a problem. Taking 9 deep soil borings for characterization was consistent with the upcoming guideline revisions, and lent extra credence to this interpretation.